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Europe's Economic War Potential

BY JOHN C. deWILDE and others

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ST. PAUL

Europe's Economic War Potential

BY JOHN C. deWILDE *with the aid of*

JAMES FREDERICK GREEN and HOWARD J. TRUEBLOOD

WITH Europe once more involved in a great war, experts and laymen in every country are anxiously appraising the strength of the rival powers. Can Germany win, or will it be overwhelmed in the end by France and Britain? No one can give a dogmatic answer to this question. There is no generally accepted criterion by which the power of any country can be accurately gauged. Experts agree only that the number of planes, tanks, guns and trained soldiers possessed at the beginning of war is not necessarily decisive. The staying-power of a belligerent is measured primarily by its economic potential. The World War proved the vital importance of the home front. For the first time in history the entire civilian population and all the material resources of the warring nations were mobilized for the prosecution of hostilities. Now that the instruments of war have been mechanized and motorized to an even greater extent, economic factors have become still more vital. Modern warfare makes enormous demands on a country's ability to furnish war material. A belligerent must not only keep its armed forces well supplied and equipped, but be able to feed and clothe the civilian population over a long period of time. The structure, organization and resources of its economy will become more decisive every day that the war is prolonged.

SINEWS OF WAR

What are the factors composing the economic potential of a country? First of all, there is its industrial capacity. No belligerent can survive long unless it possesses heavy industries capable of turning out considerable quantities of iron and steel. Well-developed engineering, automotive, and chemical industries are also essential, for these are capable of rapid conversion for the production of arms and ammunition. But factories and plants are of little use without a continuous and sufficient supply of raw materials—the sinews of war. There are few raw materials which are not vital in wartime. Iron, coal and petroleum are obviously of the greatest importance. All are bulky and used in such quantities as to prevent the accumulation of adequate supplies in anticipation of hostilities. Rubber is also essential, now that motorized transport and equipment play such a great rôle. Other materials of which considerable amounts must be available are copper, bauxite, zinc, lead, sulphur, nitrates, manganese and gun cotton.[1] Copper can be replaced to some extent by aluminum, which is manufactured from bauxite and is used in building airplanes. Lead is virtually indispensable in the manufacture of chemical apparatus of various types, paint pigments, storage batteries, solder and certain explosives.[2] Zinc is needed in making galvanized sheets and, as an alloy, is used for bearings.[3] Sulphur and nitrates are needed for the chemical industry and the manufacture of explosives. Few materials are of such strategic importance as manganese, which is necessary in making steel. Chromium is another important metal, utilized in the production of so-called stainless steel, armor plate, projectiles, high-speed cutting tools and the like.[4] Although tin has many uses, it is hardly an indispensable war material.

While there are many other strategic raw materials, such small quantities are required that acquisition of stock piles adequate for a long period is much easier. Antimony, vanadium, tungsten, molybdenum and nickel all impart essential qualities to steel—such as hardness, strength and toughness.[5] Antimony, as a hardening agent, has direct military utility in the manufacture of ammunition, while antimony sulphide is used in percussion caps.[6]

1. For an excellent survey of raw materials essential for war, cf. Brooks Emeny, *The Strategy of Raw Materials* (New York, Macmillan, 1934).
2. Army and Navy Munitions Board, *Commodities Considered Problematical* (Revised March 29, 1939), pp. 29-30.
3. *Ibid.*, p. 48.
4. *Ibid.*, p. 8.
5. John C. deWilde, "Raw Materials in World Politics," *Foreign Policy Reports*, September 15, 1936.
6. Emeny, *The Strategy of Raw Materials*, cited, p. 95.

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Tungsten or molybdenum is needed for the manufacture of high-speed cutting tools, while nickel is a valuable component of armor plate. Mercury is vital as a detonator in high explosives and ammunition,[7] and platinum deserves mention for its importance to the manufacture of nitric and sulphuric acids, as well as its use for electrical contacts and other purposes.[8]

Wartime Consumption. Although estimates regarding consumption of raw materials in time of war are largely hypothetical, a few generalizations may be made. A soldier on active duty, whether in the trenches or in the air, obviously consumes in the form of munitions more steel and non-ferrous metals than he would as a civilian. In many cases, he also eats more. Yet the record of the World War indicates that over-all consumption is just about the same in war as it is in peace, although there are many individual exceptions. The productive capacity of a nation is simply shifted from ordinary civilian requirements to war needs. Steel and other materials are used to produce munitions instead of automobiles or railroad coaches. Aluminum is used to make bombing planes instead of pots and pans. Automobiles are stored to save fuel for military use.

From April 1917, when the United States entered the World War, until November 1918, general industrial activity declined 15.5 per cent; steel ingot output 11.5 per cent; bituminous coal 14 per cent, while production of passenger automobiles declined over 75 per cent.[9] Heavy industry was devoted almost entirely to military requirements by the time the war ended, and steps were taken to prohibit or limit the manufacture of non-essentials. In this way, military requirements were met at the expense of civilian needs without increasing aggregate raw-material consumption.[10]

World War experience may or may not be an accurate guidepost to consumption trends in the present conflict, owing to the increased need for petroleum, rubber and bauxite. In fact, it is difficult to avoid the conclusion that requirements of the latter—from which aluminum is made—will show an increase over normal consumption owing to the demands of the wartime aircraft industry. So far as petroleum and rubber are concerned, a substantial but inestimable saving for war needs will result from restricting the use of private automobiles, of which there are 1,661,421 in France, 1,842,333 in the United Kingdom and 1,210,000 in Germany.[11] With its shipping driven from the seas, Germany can also dispense with heavy fuel oil requirements for its 2,328 merchant vessels.

A futher clue to wartime consumption is afforded by Germany's World War experience. In 1913 steel production was 18,935,000 tons, but by 1915 output was only 13,258,000 tons and, although there was a rise to a war peak of 16,587,000 tons in 1917, it is significant that production in no year reached the pre-war level.[12] German copper output rose from 49,400 tons in 1913 to 58,900 tons in 1915, but it averaged only 40,000 tons annually in 1916-1918.[13] Zinc output declined from 169,439 tons in 1913 to an average of 124,000 tons in 1915-1918.[14]

Essential Imports. Whether sufficient quantities of raw materials and food will be available depends not only on the country's natural resources, but on its ability to draw on foreign sources of supply. The latter, in turn, is determined by its strategic position, the availability of transport such as railways or merchant shipping, and the means of payment at its disposal. Since a large part of every belligerent's economic resources and energy are absorbed directly in the prosecution of war, its exports usually tend to fall. In such a case it becomes all the more important to have considerable reserves in gold, foreign exchange and foreign investments which can be mobilized in payment for essential imports.

There are still other factors to be considered in any evaluation of war potential. The size and quality of the labor supply is of great importance. Possession of sufficient labor reserves becomes especially

7. *Ibid.*, p. 104.

8. *Commodities Considered Problematical*, cited, p. 37.

9. Computed from Standard Statistics Company, Inc. (New York), Standard Trade and Securities, *Basic Statistics, Industrial Production Indexes*, April 29, 1938.

10. Certain non-ferrous and alloy metals and chemicals used directly in the manufacture of ammunition are obvious exceptions. Wartime requirements of steel in the United States have been estimated at 60,000,000 long tons annually, which is about 80 per cent of present capacity. On this point, as well as probable consumption of other raw materials, cf. Emeny, *The Strategy of Raw Materials*, cited, pp. 48 *et seq.* One authority concludes that a nation using all possible man power at the front would consume less coal per capita than in peace time, about as much iron and petroleum, and perhaps as much as 10 per cent more copper, nickel, tin, antimony, sulphur and rubber. If the needs of non-essential industries were curtailed, however, per capita consumption in each case would be less. The conclusion is also reached that nitrogen in one form or another might be the only raw material to be used in greater quantities. Evans Clark (Ed.), *Boycotts and Peace* (New York, Harper, 1932), pp. 180-82.

11. Registration data as of January 1, 1938. U.S., Department of Commerce, Bureau of Foreign and Domestic Commerce, *Foreign Commerce Yearbook, 1938*, p. 417.

12. U.S., Department of the Interior, U.S. Geological Survey, *Mineral Resources of the United States 1919, Part I, Metals*, p. 73a.

13. *Ibid.*, pp. 541-42. World copper production, however, rose 50 per cent from 1914 to 1917. *Ibid.*, p. 538.

14. *Ibid.*, p. 122a.

vital when a country is compelled to rely largely on home production to satisfy its wartime requirements. The country's ability to withstand the strain of huge war expenditures must also be considered, although experience during the last war has demonstrated that financial limitations usually do not play a decisive rôle. The extent to which a country has made economic preparations in anticipation of war may be of greater significance. This pertains not merely to advance accumulation of supplies, but, above all, to the organization and mobilization of economic resources for war. The existence of an efficient and experienced economic general staff at the outbreak of war may greatly influence its success on the battlefield, particularly in the initial phases of the hostilities.

To appraise the economic strength of the present, as well as the potential belligerents, it is necessary to examine the position of each with respect to all the factors contributing to a country's war potential.

VAST RESOURCES OF GREAT BRITAIN

Only during the last three years has Great Britain slowly mobilized its military and economic resources for war.[15] While its preparations in 1939 were hardly more advanced than in 1914, it is again counting on its vast wealth, its industries, and its navy and merchant marine to bring about a victorious issue.

In the current conflict, as in the World War, one of Britain's mainstays will be the enormous capacity of its heavy industries. The British economic and social structure has remained more stable than that of any other great power in Europe. Britain was able to recapture much, but not all, of its prewar predominance in commerce, shipping and investment. Although here and there old-fashioned methods and equipment were stubbornly retained, British industry as a whole undertook extensive reorganization and modernization, and developed many new fields--automobiles, electrical engineering, chemicals and optical instruments—which are particularly valuable to national defense.

Industrial Progress. During the last decade, while economic development stagnated in many countries, Britain's industry has forged rapidly ahead. Not only have depression losses been recovered, but previous highs have in many cases been exceeded. During the first half of the present year industrial production was over 20 per cent higher than in 1929. The output of motor cars has almost doubled, and was 30 per cent greater than German production in 1938.[16] At the outbreak of the war, British steel production was approaching capacity, estimated at 1.1 to 1.2 million tons a month or 13 to 14 million tons a year.[17] Last year steel output in the United Kingdom dropped to 10,561,000 tons, compared with a production of approximately 25,000,000 tons in Greater Germany, including Czechoslovakia. Although Britain's capacity is far inferior to Germany's, the amount of steel available for the defense services can be greatly increased by giving preference to military needs and curtailing exports. With Canada, British India, South Africa and Australia producing 3.5 million tons of steel in 1937 and 3.3 million in 1938,[18] supplies may also be partially supplemented from Empire sources.

Britain has been much slower to increase its capacity for armament production than Germany. During the last twelve months, however, the Reich's margin of superiority has been greatly reduced. British shipyards have been turning out a record volume of naval tonnage.[19] When hostilities broke out, 700,000 tons were under construction.[20] The output of aircraft has also been stepped up, one authority estimating Britain's capacity at the beginning of the war at 500 to 800 machines per month —a figure not far below that of Germany.[21] Canada may become an important arsenal for Britain.

Like Germany, Britain may experience considerable difficulty in recruiting enough labor to maintain and increase domestic production. The importance of adequate labor reserves was clearly proved in the last war when the country was utilizing twelve men at home for every one in the field.[22] The rearmament program, which began at the height of the 1937 boom, greatly expanded industrial activity and employment during the first half of 1939. The labor market has been gradually restricted by enlargement of the Territorial Army and regular services, conscription, civil defense preparations, and—more recently—organization for war. In July 1939 employment in Great Britain reached an all-time high of 12,064,000.[23] In the first

15. Cf. James Frederick Green, "Economic Mobilization of Great Britain," *Foreign Policy Reports*, July 1, 1939.

16. League of Nations, *Statistical Yearbook, 1938-1939*, p. 197.

17. For a survey of Britain's steel potential, cf. J. W. Reichert, "Der Stand der englischen Stahlindustrie," *Wirtschaftsdienst*, June 16, 1939, pp. 807-11. During recent months, production of steel ingots and castings (in tons) has developed as follows: May 1,218,100; June 1,175,600; July 1,153,100. The average monthly output in 1913 was 638,600 tons. Cf. *Board of Trade Journal*, August 17, 1939, p. 284.

18. Reichert, "Der Stand der englischen Stahlindustrie," cited, p. 807.

19. Hector Bywater, *The New York Times*, August 6, 1939.

20. Hanson W. Baldwin, *ibid.*, September 4, 1939.

21. *Ibid.*

22. R. W. B. Clarke, "Organizing Industry for Defense," *The Banker*, August 1939, pp. 157-64.

23. *The Economist, Trade Supplement*, August 26, 1939.

eight months of 1939 unemployment declined from 2,039,000 to 1,232,000, and will eventually shrink during the course of the war to an irreducible minimum.[24]

Even more serious are the bottlenecks created by labor shortages in specific trades, particularly with regard to skilled labor required for munitions, engineering and metals. Unemployment had already been reduced to a minimum in many categories by midsummer, while reserves existed chiefly in unrelated trades. The difficulties of training workers to new tasks, moving them to new areas, and introducing women and previously unemployed persons into industry have already appeared. The labor problem, however, will not assume catastrophic dimensions as long as Britain can continue to draw on the factories and farms of overseas countries, thus utilizing the tremendous labor reserves abroad.

Limited Natural Resources. By itself, Great Britain is as poor in natural resources as Germany. Its dependence on imports of foodstuffs is far greater, amounting to about 75 per cent. It is self-sufficient in only three important foods—fish, milk and potatoes—and seriously deficient in cereals, sugar and fats.[25] Despite the subventions paid to farmers in recent years, the area under cultivation today is 17 per cent smaller than in 1914. The government undertook last spring to subsidize the plowing and fertilization of grassland acreage, but a substantial increase in home production of food is hardly to be anticipated.

In raw materials Britain has surpluses only of coal and nitrates. It usually imports about a third of its iron ore. While the coal mined in the United Kingdom during 1938—231,875,000 metric tons—was 18 per cent less than in 1913, the available labor and equipment in the coal fields is probably sufficient for all demands in the present conflict. Coal has been replaced by oil in the navy and to some extent in the merchant marine, but it is still necessary for domestic industry and the production of electric power. The amount of iron ore mined in Britain has also declined—from 16.3 million tons in 1913 to an average of 13.1 million in the three years 1936-1938. During the same period, imports fell from 7.3 to 6.8 million tons. This reduction in ore supplies has been offset by increased utilization of domestic and imported scrap iron.[26] Great Britain is particularly vulnerable with regard to mineral oil, for it can satisfy only 7 per cent of normal peacetime requirements from domestic materials.[27] During the first half of 1939 the country imported 1,691 million gallons, or about 6 million tons, of crude oil and petroleum products. In view of the large increase in consumption anticipated in wartime, the government has prepared plans for reserves, price control and rations.

Reliance on Imports. Although official and private stores of both food and raw materials are said to be adequate for the opening weeks, perhaps months, of the war, Britain's chief problem remains exactly what it was in the World War—how to maintain a regular supply of foodstuffs and industrial raw materials from overseas. The World War would have been quickly decided if Germany had been able to blockade the British Isles or had succeeded in its submarine warfare. No great power was, or is, so dependent on international trade. Great Britain's population has increased by 4,898,000, or 11.8 per cent, since 1913, so that its problems of supply, finance and transport have become even more serious.

As the world's greatest importer, Britain's annual purchases have averaged £932,004,000 in the past three years.[28] During this period foodstuffs averaged £414,681,000, or 44.5 per cent of the total; raw materials £270,259,000, or 28.9 per cent; and manufactures £240,473,000, or 25.8 per cent. In the case of many vital articles, British imports have either remained about the same or increased since the pre-war period.

Britain's Foreign Assets. To purchase these necessary supplies, the British in wartime are compelled to rely on their gold and foreign exchange reserves and investments abroad, since much of their normal income from overseas—in exports, shipping, insurance, interest and dividends—is greatly diminished. Great Britain had little difficulty in financing its imports during the World War, because it entered the conflict as the greatest creditor nation in the world. Its monetary gold stocks in 1913 amounted to approximately £182,200,000, while its foreign investments were estimated at £3,500,000,000. Although much of this overseas capital was in the form of direct investments that could not easily be liquidated, Britain's reserves of dollar stocks and bonds—particularly in American railways—proved an important factor in the final victory. Many of its imports were even-

24. The original impact of war, however, was to increase unemployment to 1,331,000 in September. *The New York Times*, October 3, 1939.

25. "Food Production in War," *The Economist*, June 10, 1939.

26. Cf. Reichert, "Der Stand der englischen Stahlindustrie," cited, p. 810.

27. *The Economist*, August 5, 1939, p. 283.

28. 1936, £847,751,000; 1937, £1,027,824,000; 1938, £920,437,000. *Accounts Relating to Trade and Navigation of the United Kingdom*, December 1938, p. 4.

tually financed by credits floated in the United States, which became part of the vast war debt. Through the American Dollar Securities Committee, the British Treasury mobilized a total of £622,595,585. Of this sum, £216,644,396 was purchased from investors, and £405,951,189 was borrowed.[29]

The problem of paying for imports should not be much more difficult than during the World War. Although Britain has not maintained its capital exports at pre-war levels during the past two decades and has reduced its foreign holdings since the depression, it should have adequate resources for even a long conflict. The combined gold reserve of the Exchange Equalization Account and the Issue Department of the Bank of England totaled about £559.65 million according to the last published account.[30] Estimates vary greatly as to Britain's present investments abroad, although one authoritative calculation suggests that something like £1,172.25 million should be available outside the United Kingdom.[31] According to one student, American investments which Britain can liquidate in wartime totaled between 2,300 and 2,400 million dollars at the end of May 1939.[32-33] On the other hand, the Allies or their citizens are debarred from borrowing in the United States as long as the embargo on loans, incorporated in the Neutrality Act of 1937, remains in effect. Even if the neutrality legislation is repealed, the Johnson Act will still prevent the British and French governments or their agencies from floating loans or selling their securities in the United States. The importance of this prohibition is indicated by the fact that American loans to all belligerents during the World War had reached a total of $2,600,000,000 by April 5, 1917.[34]

American neutrality legislation also restricts British purchases in the United States. During the years when this country was neutral in the World War, Americans were free to ship munitions to the belligerents. Under the arms embargo now in effect, such sales are no longer possible. Unless Congress amends the Neutrality Act in accordance with the wishes of President Roosevelt, the French and British will be deprived of approximately 700 planes which have been ordered but remain undelivered.[35] Nor would it be possible for them in the future to utilize the extensive capacity of the American aviation industry.

Reduced Capacity of Merchant Marine. Britain's ability to obtain essential supplies is further conditioned by its control of the seas. Even if British command of the seas should meet no effective challenge, much would still depend on the carrying capacity of the merchant marine. While the shipping fleet of the United Kingdom has declined from 18,892,089 tons in 1914 to 17,891,134 tons in 1939, or over 5 per cent,[36] the growth of shipping in other parts of the Empire—from 1,631,617 tons in 1914 to 3,110,791 tons in 1939—as well as the increased speed and better loading facilities compensate in part for the decline in both the number and tonnage of British ships. The government's recent efforts to encourage shipbuilding by financial assistance has also accelerated the construction of new tonnage.[37] Great Britain will undoubtedly profit from the experience of the World War by further promoting ship construction, by immediate use of the convoy system, and by efficient organization of mercantile shipping and distribution of freight tonnage.[38] The navy is relatively stronger with respect to the German navy than in 1914, and is better prepared to cope with surface and submarine attacks on merchant shipping.

Since the volume of British imports averaged about 29 per cent higher during the last three years than in 1913, the demand for shipping tonnage will presumably be greater than in the World War. These increased requirements may be met, however, with the aid of neutral merchant marines which are much larger than before the last war. A part of Scandinavian and Netherland shipping facilities can certainly be used by the British. Under the terms of the Neutrality Act of 1937, American ocean-going ships, which increased from a total of 2,026,908 gross tons in 1914 to 8,909,892 tons in 1939, are also able to carry all but arms and ammunition to the belligerents. If the legislation at present pending before Congress is enacted, however, the American merchant marine would no longer be able to assist the Allies in this way.

Two problems remain to be considered—that of financing war expenditure, and mobilizing the eco-

29. "Mobilizing Overseas Investments," *The Economist*, August 12, 1939, p. 306.

30. *The Economist*, July 1, 1939. In terms of pre-war pounds, it amounted to £329.85 million.

31. "Mobilizing Overseas Investments," *The Economist*, August 12, 1939, p. 307.

32-33. Winthrop W. Case, *The Annalist*, September 21, 1939.

34. Winthrop W. Case, "Economic Problems of U.S. Neutrality in Wartime," *Foreign Policy Reports*, April 15, 1939, p. 23.

35. *Christian Science Monitor*, September 8, 1939.

36. Cf. *Lloyd's Register of Shipping, 1939*.

37. For summary of recent legislation, cf. Green, "Economic Mobilization of Great Britain," cited, p. 99.

38. For useful survey of World War experience in the shipping field, cf. "The Freight Tonnage Problem of the World War," *Supplement to the Weekly Report of the German Institute for Business Research*, May 4, 1939.

UNITED KINGDOM IMPORTS OF SELECTED ARTICLES*

		1913†	1937
Wheat	cwts.	105,878,102	96,858,586
Barley	"	22,439,248	18,176,124
Oats	"	18,162,663	1,207,844
Maize	"	49,154,953	71,671,479
Feed stuffs for animals			
Cereal by-products	tons	228,993	960,086
Oilseed cake and meal	"	406,700	636,423
Chilled beef	cwts.	5,248,004	8,969,699
Frozen beef	"	3,952,880	3,357,380
Tinned beef	"	Not distinguished	1,082,609
Mutton and lamb, chilled or frozen	"	5,204,257	6,801,723
Bacon	"	4,857,890	6,926,042
Hams	"	854,995	674,092
Other pig products	"	734,861	1,457,463
Butter	"	4,139,028	9,417,669
Sugar			
Refined	"	18,450,897	850,763
Unrefined	"	20,934,293	44,318,308
Iron ore	tons	7,230,605	6,952,780
Copper ore	"	133,375	30
Tin ore and concentrates	"	34,592	50,935
Petroleum			
Crude	thousand gals.	1,109	527,267
Motor spirit and other refined oils	"	486,998	2,547,485
Wood pulp	tons	977,757	1,793,651
Rubber, raw, including crepe and lastex	centals	1,574,439	3,045,074
Pig iron and ferro-alloys	tons	216,708	716,022
Aluminum	cwts.	Not distinguished	631,448
Copper, unwrought	tons	104,678	390,683
Lead, pig	"	204,136	372,868
Nickel and nickel alloys	value	Not distinguished	£4,037,277
Zinc, crude	tons	145,004	176,673

Statistical Abstract for the United Kingdom, 1939, pp. 396-406.
†Including territory now known as Eire.

nomic resources of the country rapidly and effectively. The first should not prove serious. Although the public debt on March 31, 1939 was over ten times greater than in 1914 and taxation was considerably heavier, the British people are still so wealthy that they should be able to shoulder the burden of huge war outlays much more easily than the Germans. On the other hand, they may have a more difficult task in bringing all of Britain's great economic power to bear on the conflict, and particularly in coordinating the resources of the various units of the Empire. Prior to the war the British government moved very slowly in taking control of the national economy. An embargo on foreign loans was restored in December 1938, while a Ministry of Supply—endowed with extensive powers, restricted at first to army material—was established in June 1939.[39] At the height of the recent diplomatic crisis, Parliament hurriedly passed on August 29 the Emergency Powers (Defense) Act, granting the government a virtual dictatorship for the duration of the war.[40] Under this legislation, the government is given complete authority over all aspects of industrial production, including prices, agriculture, transportation, communication and navigation. Since the entire machinery of control had to be established, considerable time may be expected to elapse before the country's economic life is efficiently organized on a war basis.

FRENCH STRENGTH EQUAL TO 1914

In analyzing French war strength, it is well to note, first of all, that the country's industrial capacity is greater today than before the World War. While French industrial production in 1913 was only about 48.15 per cent of the German, by 1928-

39. Cf. Green, "Economic Mobilization of Great Britain," cited, pp. 96, 99.

40. For text, cf. *The Times*, August 29, 1939.

1929 it had reached 66.6 per cent.[41] In 1929 the output of iron and steel was double that of 1913.[42] Restoration of the rich industrial region of Alsace-Lorraine was primarily responsible for these increases. While the industrial boom in Germany and comparative depression in France have brought a change in relative output to the Reich's advantage, the capacity of French industry has remained unaltered. It can produce an amount of iron and steel equal to that of Britain, and its automotive plants are capable of turning out about half as many cars as British factories.

Although France cannot manufacture such a large volume of arms and ammunition as Germany, strenuous efforts have been made, particularly during the last year, to step up the production of war material. After lagging seriously behind, airplane factories probably attained a monthly output of 200 machines during August and September 1939, and are rapidly expanding their capacity.[43] If France, behind the Maginot Line, remains free from any large-scale military invasion, its ability to turn out war supplies should be considerably greater than in the World War.

Foodstuffs and Raw Materials. The same can be said of its capacity to produce food at home. While France is not completely self-sufficient in foodstuffs, the amount of agricultural land available per inhabitant is twice as large as in Germany.[44] Its favorable position in this respect, has been recognized in the Reich. According to one German authority,[45] "France will not suffer from any lack of vital foodstuffs" as long as a certain amount of oil seeds and colonial products can be imported.

The country's production of raw materials is about the same today as in 1913—with one very important exception. With the mines of Lorraine in its possession, France can now satisfy its own requirements in iron ore, and even has a large surplus available for export. In coal, however, France can still cover only 60 per cent of its needs; and it is almost completely deficient in all other minerals and raw materials except potash. The colonies could supply the mother country with nickel, chromium, graphite and phosphates.[46] The French Empire produces no mineral oil at all.

41. Institut für Konjunkturforschung, *Vierteljahrshefte zur Konjunkturforschung, Sonderheft, 31,* 1933, p. 7.

42. League of Nations, *Statistical Yearbook, 1926* and *1938-1939.*

43. *The Economist,* August 12, 1939.

44. *Weekly Report of the German Institute for Business Research,* February 9, 1939.

45. Cf. Justus Schmidt, *Kriegswirtschaftliche Jahresberichte, 1937.*

Gold and Foreign Investments. As long as the French and British navies control the seas, it will be possible for France, just as in the last war, to draw on foreign sources of supply. The extent to which it can do so will depend entirely on the capacity of the merchant marine and the availability of means of payment. In June 1939 the gross tonnage of the French merchant fleet amounted to 2,933,933, as compared with 1,922,286 in 1914. The Bank of France and the French government hold about two and a half times as much gold today as at the end of 1913. While gold reserves in 1913 totaled only $679,000,000,[47] holdings at the end of July 1939 aggregated $1,702,700,000 when revalued at pre-war levels.[48] If coins and private gold hoardings are included, however, the total held today is about the same as before the last war.[49]

Foreign investments which the French can liquidate for the payment of war imports are probably much less today than in 1914. At that time total investments abroad amounted to about 45 billion francs.[50] During and immediately after the war heavy losses were sustained in Russia, Turkey and the Balkans. There is no official estimate on French foreign holdings today, and private estimates, bearing on the year 1929, vary widely—from 90[51] to as much as 180 billion francs.[52] Even an arbitrary compromise between the two figures—135 billion—would still make the total compare unfavorably with 1914 investments which, in terms of post-war francs, amounted to about 221.6 billion.[53] Since 1929, losses on prior investments have been large and some capital has been repatriated from certain areas in Europe. On the other hand, Frenchmen have sent a considerable amount of capital to London and New York for investment and safekeeping. French investments in the United

46. "Die Bedeutung des Kolonialreichs für Frankreichs Versorgung mit mineralischen Rohstoffen," *Vierteljahrshefte zur Wirtschaftsforschung, 1938-1939,* Heft 4. According to an estimate, cited in this source, France in 1929 could furnish 48 per cent of its consumption of minerals.

47. League of Nations, *Interim Report of the Gold Delegation of the Finance Committee* (Geneva, 1930), p. 114.

48. Cf. *Federal Reserve Bulletin,* September 1939, p. 818.

49. In 1913 monetary gold stocks, including gold in circulation and not held by the Bank of France, were valued at $1,700,000,000. Cf. *Interim Report of the Gold Delegation,* cited.

50. Herbert Feis, *Europe, The World's Banker, 1870-1914* (New Haven, Yale University Press, 1930), p. 51.

51. Estimated on the basis of returns from foreign investments by Eugene Staley, *War and the Private Investor* (New York, Doubleday, Doran, 1935), p. 527.

52. *L'Europe Nouvelle,* January 11, 1930.

53. On June 25, 1928 the French currency was stabilized on the basis: 1 old franc=4.925 new francs.

States at the end of May 1939 have been estimated at between 500 and 600 million dollars.[54]

The condition of French internal finances is somewhat better than Germany's. True, the French Treasury has been in chronic difficulties for many years, and the management or mismanagement of public finances has caused the downfall of numerous cabinets. The social and economic experiments of the Popular Front, which came to power in May 1936, undermined the confidence of the French investor in the country's financial future and precipitated a large-scale flight of capital. Since August 1936 the franc has had to be devalued three times. Fundamentally, however, economic and financial conditions were not unsound. Lack of confidence was the primary difficulty. Following a return to more conservative governmental and fiscal policies in 1938, capital began to flow back in large volume. The reservoir of capital on which the Treasury can draw is still vast. Aided by the proverbial patriotism and frugality of the French people, the government will probably meet with no insuperable obstacles in financing the war.

In their economic preparations for war the French lag behind the Germans. At the start of the conflict they had no economic general staff comparable to that of Germany. The economic energies of the country were not mobilized in advance of hostilities to the same degree as in the Reich. To compensate for this relative lack of economic preparedness, France, by virtue of uninterrupted compulsory military service, has many more well-trained soldiers. Behind the protective wall formed by its large army and the Maginot Line of fortifications, France can mobilize its economic resources slowly, but none the less effectively.

GERMANY'S ECONOMIC POWER

Germany's industrial plant and equipment appear adequate for war purposes. Despite the territorial losses inflicted by the Versailles peace settlement, the industrial production of the Reich was 27 per cent greater in 1938 than in 1913. For Greater Germany, including Czechoslovakia, the total increase amounted to almost 50 per cent.[55] During the same period the output of Britain rose only 15 per cent. German heavy industries, so vital for the manufacture of war material, have undergone rapid development, particularly in recent years. In 1938 the steel output of the area now included in the Reich aggregated 24,969,000 metric tons, as against 20,682,000 for the same territories in the last year before the World War.[56] Germany also possesses a remarkably well-developed machine industry which, under the stimulus of rearmament, has raised its daily production about 50 per cent above 1928 levels.[57] The country's airplane factories were probably capable of producing 700 to 1,000 airplanes a month at the outset of the war.[58] With Czechoslovakia, the German army acquired the famous Skoda Works, as well as other important plants manufacturing rifles, guns and airplanes. The motorization program deliberately fostered by the Hitler government has borne fruit in a rapid increase in the output of motor cars during recent years. A large plant has been started at Fallersleben for the purpose of manufacturing a popular-priced small car, and if it enters into production in 1940, the capacity of the automotive industry should approximate that of Britain.

One great weakness of the Reich's industrial plant has been its rapid rate of depreciation. Although much money and material has been devoted to renewal and extension of equipment in the so-called capital-goods industries, machinery has been subjected to such constant use that reinvestments have here and there not kept pace with needs. Nevertheless, the most essential war industries appear to be well-equipped. Much more serious is the condition of the German railways. By the middle of 1938 the amount of rolling stock was more than 10 per cent smaller than at the end of 1929.[59] Now that war has broken out, it is doubtful that the program for replacing worn-out equipment and increasing the number of cars can be fully carried out.

Raw Material Shortages. Relatively poor in natural resources, Germany must ordinarily import more than a third of its raw materials. It possesses surpluses only of coal, potash and magnesite. The Reich produces little or no copper, tin, bauxite, mercury, textile fibers, or such steel-making metals as nickel, tungsten, chromium, vanadium and molybdenum. Its output of iron ore, petroleum, zinc, sulphur and pyrites, antimony, rubber, and timber is also insufficient. As the result of intensive

54. Winthrop W. Case, *The Annalist*, September 21, 1939.

55. "The Predominant Position of German Industry," *Weekly Report of the German Institute for Business Research*, June 29, 1939.

56. Cf. League of Nations, *Statistical Yearbook, 1926* and *1938-1939*. Blast furnaces of the Hermann-Goering Werke were scheduled for completion in 1939 and expected to add one million tons to the capacity of the steel industry during 1940. Cf. Institut für Konjunkturforschung, *Halbjahresberichte zur Wirtschaftslage, 1939-1940*, Heft 1, p. 8.

57. Institut für Konjunkturforschung, *Statistik des In- und Auslands, 1939-1940*, Heft 2, p. 40.

58. Cf. Hanson W. Baldwin, *The New York Times*, September 4, 1939.

59. Reichskreditgesellschaft, *Deutschlands Wirtschaftliche Lage an der Jahreswende, 1938-1939*, p. 28.

effort, the Reich's domestic supplies of raw materials have been considerably enlarged. By 1937 the home output of all such materials was 56 per cent greater than in 1928.[60] The production of light metals, used largely in the airplane industry and as substitutes for copper, zinc and lead, has risen phenomenally. Last year Germany produced 160,000 tons of aluminum, against 19,000 tons in 1932.[61] The output of plastic materials has also increased substantially.[62] Last year's production of synthetic rubber, *buna,* has been variously estimated from 10,000 to 40,000 tons.[63] A very considerable increase in the output of synthetic fibers was largely responsible for raising the supply of domestic raw materials in the textile industry to 32.4 per cent of total requirements by 1938. Home production of crude oil rose to 553,000 tons last year, while the manufacture of synthetic fuels was increased to 1,700,000 tons.[64]

The German government has unquestionably accumulated stock piles of the most strategic raw materials. It is difficult to conceive that any country which has prepared for war so intensively during the past few years has neglected such an important task. While private industry has been unable to accumulate any large supplies, it is altogether likely that at least part of the increased imports of raw materials during the last few years has gone into government stocks. There is even evidence tending to show that supplies have been imported for army account without appearing in the official trade statistics.[65] It would hardly have been difficult to buy sufficient supplies of many non-ferrous metals like chromium, nickel and antimony which, though vital, are not used in large quantities. The Reich has also stocked some rubber and mineral oil, and is reported to have stored large amounts of uniforms for the army.

Germany's most difficult task will probably be to maintain an adequate supply of iron ore and mineral oil, both of which are consumed in enormous quantities during wartime. Although the output of crude oil and motor fuel from domestic sources reached 2,253,000 tons in 1938, imports last year still amounted to 4,977,000 tons. Despite more intensive exploitation of domestic iron deposits, imports of iron ore, as well as scrap, pig and semi-manufactured iron, have further increased. In war

GERMAN IMPORTS OF ESSENTIAL RAW MATERIALS

(*in thousands of metric tons*)

	1936	*1937*	*1938*	*1st half of 1938**	*1st half of 1939**
Wool and other animal hair	125.4	128.0	166.1	106.1	109.7
Cotton and wool waste	325.0	349.4	352.8	198.7	170.9
Flax, hemp and similar fibers	197.8	265.5	261.2	131.3	157.2
Rubber and gutta-percha	82.7	123.2	108.5	62.4	55.8
Crude oil and tar	982.8	1,197.9	1,326.4	653.7	656.3
Motor fuel and lubricants	3,235.2	3,109.4	3,640.6	1,604.2	2,079.0
Iron ore	18,469.3	20,424.3	21,927.5	10,748.8	11,247.0
Scrap iron	345.5	587.9	1,164.1	595.8	524.4
Pig iron	112.8	131.9	447.2	87.9	437.7
Manganese ore	229.6	554.2	425.8	276.3	153.9
Copper ore	482.5	555.6	653.9	324.9	336.5
Copper (including scrap and alloys)	195.1	262.5	358.4	172.9	119.6
Lead ore	99.3	126.8	141.3	77.3	59.4
Lead	68.9	73.3	75.3	27.1	35.8
Zinc ore	120.6	146.2	185.0	107.7	80.4
Zinc	72.8	70.7	74.9	41.6	37.8
Chrome ore	123.4	132.2	176.4	67.0	110.1
Nickel ore	17.7	20.0	34.2	11.3	15.8
Nickel	3.4	3.3	4.0	3.1	2.4
Tin	9.2	10.3	12.1	6.3	4.9
Aluminum	6.2	6.9	18.8	6.1	7.3
Other non-ferrous metals	6.9	10.2	12.4	6.8	7.0
Sulphur pyrites	1,042.8	1,464.4	1,430.9	731.8	736.7

*Including imports into Austria.

60. *Weekly Report of the German Institute for Business Research,* February 28, 1938.

61. *Halbjahrsberichte zur Wirtschaftslage, 1939-1940,* Heft 1, cited, p. 5.

62. Cf. John C. deWilde, "Germany's Controlled Economy," *Foreign Policy Reports,* March 1, 1939.

63. "Synthetics and Substitutes," *The Economist,* August 12, 1939; also "Raw Materials: Germany's Potential Sources of Supply," *The Bulletin of International News,* August 12, 1939. Coal and lime are the basic materials used in the making of *buna.*

64. Reichskreditgesellschaft, *Deutschlands Wirtschaftliche Lage in der Jahresmitte, 1939,* p. 9.

65. DeWilde, "Germany's Controlled Economy," cited, p. 300.

it seems unlikely that Germany can get more than a third of its iron ore from domestic sources.

The Food Supply. In food the Reich's position is a little better. Calculated in terms of calories or heat-units, home-grown food covers about 83 per cent of the country's consumption.[66] The acquisition of Austria and Czechoslovakia has not materially affected the degree of self-sufficiency. Yet the above percentage overestimates the extent to which Germany can dispense with imports. While the Reich can ordinarily satisfy its own requirements in the major staples—bread, grains, potatoes and sugar—it is considerably deficient in foods rich in mineral salts, protein and vitamins such as fruit, vegetables and eggs.[67] It can supply almost all the meat consumed in Germany, but only with the help of foreign fodder. The most serious shortage is in fats. Last year fat imports cost 384.3 million marks, and the Reich covered only 44 per cent of its needs from domestic sources.[68]

Immediate prospects for an adequate food supply are not unfavorable. As the result of a record grain harvest in 1938, Germany has been able to accumulate reserves reported at 8.6 million tons—equivalent to a little more than a third of the amount consumed each year in the Reich, exclusive of Austria and Czechoslovakia. This year's harvest is also reported to be excellent. In bread grains—rye and wheat—Germany will probably have a considerable carry-over into the 1940-1941 crop year. The outlook is less promising for milk and meat. The number of milch cows declined about 3 per cent during 1938, although the total number of cattle in the old German territory is still 7 per cent greater than in 1913.[69] In hogs the situation is also slightly better than before the last war. Presumably Germany has been able to store some foodstuffs, particularly meat, for army consumption. Fat and oil reserves, officially put at 418,000 tons last spring, are reported to be even greater today.[70] Even so, the amount probably does not bulk very large in relation to the 2,141,000 tons which were produced at home and imported from abroad during 1938.[71]

Foreign Sources of Supply. The British blockade, more perhaps than any other factor, brought about Germany's breakdown in the last war. Can Germany be successfully blockaded today? The neutral sources of supply which are still accessible at present furnished the Reich with 44.7 per cent of its imports during the first quarter of 1939. These countries may not be able to supply Germany in the same volume during war. Britain and France are already following the precedent set in the World War and rationing the imports of neutrals to insure that large amounts are not diverted to the enemy. With the number of non-belligerents greater than in the last war, supplies from overseas may sift through the Franco-British net. The neutrals will be able to send Germany some proportion of their own production of food and raw material provided there are means of payment. From Hungary and Yugoslavia it could get enough bauxite for the manufacture of aluminum. Yugoslavia, Norway, Sweden and Finland might supply some copper, but at best much less than half of Germany's peacetime imports.[72] The Soviet Union could cover the Reich's entire needs in manganese. From Italy Germany could obtain mercury as well as sulphur. Poland, now conquered, can furnish the Reich with plenty of zinc. The rich coal mines of Polish Upper Silesia and Teschen would also be of great help to Germany at a time when its own mines were finding it hard to satisfy the growing needs of war industries and the imperative demand for export. The Soviet Union or Southeastern Europe and Poland would probably be able to deliver sufficient quantities of timber.

The Reich will have the greatest difficulty in getting adequate amounts of rubber, cotton, oil and iron ore. It is cut off completely from all foreign sources of natural rubber, and its own production of *buna* is far from sufficient. Its main source of supply for iron ore will presumably be Sweden, which in 1938 furnished 41 per cent of its imports.[73] Even if Sweden had sent its entire exports of iron ore to Germany that year, this would have constituted only about 58 per cent of the Reich's purchases abroad. The amount of ore derived from Sweden may even decline during the war. Britain will probably utilize its own control over vital raw materials which Sweden needs to induce that country to deliver a larger proportion of its output to the Allies. Moreover, the bulk of Swedish ore shipments has always gone through the ice-free Norwegian port of Narvik and then over the North Sea to Ger-

66. *Weekly Report of the German Institute for Business Research*, May 23, 1939.

67. "Die zweite Linie der Ernährungsfront," *Der deutsche Volkswirt*, August 12, 1939.

68. *Deutschlands Wirtschaftliche Lage in der Jahresmitte, 1939*, cited, pp. 15-16.

69. *Ibid.*, p. 14.

70. *Deutsche Bergwerks-Zeitung*, August 27, 1939.

71. *Deutschlands Wirtschaftliche Lage in der Jahresmitte, 1939*, cited, p. 15.

72. In 1937 Germany imported 267,600 metric tons of copper, but obtained only 38,000 tons from the countries mentioned. Total exports of the latter aggregated 104,300 tons. Cf. League of Nations, *International Trade in Certain Raw Materials and Foodstuffs, 1937* (Geneva, 1938).

73. "Iron Ore from Sweden," *The Economist*, August 5, 1939.

many. Now the Reich will have to get its shipments from the Swedish Baltic port of Lulea which is frozen from December to March.[74]

For mineral oil Germany places its chief reliance on Rumania. The Rumanian output, however, has declined continuously during recent years. In 1938 its exports to all countries—4,495,000 metric tons[75]—were not quite sufficient to cover the Reich's import requirements which amounted to 4,967,000 tons.[76] Yet only 703,732 tons were actually sent to Germany. While the Reich may be able to insist on a greater share, it is doubtful that Rumania can interrupt or greatly curtail its shipments to other Balkan countries, Italy, Britain and France. Only the seizure of Rumania could insure the entire oil output for Germany. Theoretically, the Reich could obtain at least part of its mineral oil from the Soviet Union, which in 1937 exported 1,930,000 metric tons of crude oil and petroleum products. The quantity available for export may be considerably less now that Russia itself is on a war basis. Moreover, the remoteness of Russian oil fields might create serious transport difficulties.[77] Nor would the Soviet Union be likely to sell all its exports to Germany. In the division of Poland effected on September 28, the U.S.S.R. also obtained the major share of Polish oil fields, which in 1938 yielded 507,253 metric tons.[78]

Part of Germany's deficiency in foodstuffs can be covered by imports from the Balkans. In 1938 the five countries of Southeastern Europe supplied 22 per cent of its food imports. Under pressure from Germany the proportion may even be increased. This area might be made to deliver whatever wheat, corn and barley the Reich needs, as well as a considerable percentage of its requirements in livestock. From a conquered Poland Germany may draw additional quantities of rye, barley, oats and livestock. The major difficulty would still lie in the supply of fats. The Baltic countries, Poland, Scandinavia and the Netherlands might deliver some bacon, lard and butter, but their exports would fall far short of Germany's fat needs. The Soviet Union has no large food surplus, except cereals.

Gold and Foreign Exchange Reserves. While Germany, in theory, might still be able to draw on an extensive area for supplies, its ability to do so in practice will largely depend on whether it can pay for these imports. Payment may be made in gold, foreign exchange and foreign securities, or in goods. In sharp contrast to 1914, the Reich has little gold or foreign exchange. In June 1914 the amount of gold in the Reichsbank and in circulation was valued at over 3 billion marks. Germany's foreign investments were estimated at more than 25 billion. Today the Reichsbank's official reserves of gold and foreign exchange total only 77 million marks, and German holdings of foreign securities are comparatively negligible. Since the World War the Reich has become a debtor instead of a creditor. As the result of successive debt moratoria, its credit standing has sunk to a low point. True, the German government has certain foreign assets which it has never published. From Austria it obtained a gold and foreign exchange supply amounting to 208,000,000 marks, and additional foreign security holdings conservatively estimated at 300,000,000 marks.[79] From Czechoslovakia it secured gold stocks valued at approximately 189 million marks[80] and probably some private holdings of foreign securities. While Germany may have set aside other foreign exchange proceeds for emergency, the condition of its balance of international payments during recent years has not permitted the accumulation of large reserves. At most the Reich will hardly be able to mobilize more than 2 billion marks in gold and foreign assets for payment of its imports. Such a sum would represent only a third of Greater Germany's entire imports during 1938.

Much reliance will therefore have to be placed on payment in goods. Germany would have to continue exporting manufactures, particularly machinery, and coal on a large scale. With the country's economic resources largely absorbed by the production of war material, it may be doubted that large surpluses will remain available for export. Even before the outbreak of the war the machine industry was employed at capacity, and deliveries in many cases could not be guaranteed before the expiration of one or two years. Lack of adequate labor reserves constitutes a serious limitation on Germany's ability to produce not only for export, but also for the home market. In the last few years Germany has been considerably handicapped by the shortage of labor, and with several million more men absorbed into the armed forces its difficulties will be appreciably greater. A vast amount of labor

74. *Ibid.*

75. *The Economist*, August 5, 1939.

76. Including 1,326,400 tons crude oil and tar, and 3,640,600 tons of motor fuel and lubricants.

77. "Nazi Needs and Russian Resources," *The Economist*, September 2, 1939.

78. *Deutsche Bergwerks-Zeitung*, August 27, 1939.

79. DeWilde, "Germany's Controlled Economy," cited, p. 300.

80. The gold stocks of the Czech National Bank actually amounted to 206,000,000 marks. The Bank surrendered 40,000,000 to the Reichsbank on March 6, 1939, ostensibly in return for the Czech crowns retired from circulation in the Sudeten territory. Of the balance, which was apparently held abroad, the National Bank of Switzerland subsequently turned over 32 million to Germany, and the Bank for International Settlements 117 million.

has been used, directly and indirectly, in the production of such synthetic raw materials as *buna*, staple fiber, motor fuel and plastics. In agriculture the present acute shortage of labor is likely to become much worse and may bring about a considerable decline in farm output. Germany's import requirements in food may thus even be greater than in peace time. While the Reich can rely to some extent on Polish and Czech labor reserves, it will have to reckon with the possibility of passive resistance.

Strained Finances. While the material limitations on Germany's ability to wage a prolonged war are most important, much attention has been paid to possible financial limits. Undoubtedly the country's financial structure has been strained during recent years. The huge volume of armament expenditure—recently estimated by Hitler himself at 90 billion marks—has been a great burden. At the outbreak of war the public debt, including that of state and local governments, was probably well in excess of 65 billion marks.[81] While the total is not alarmingly large in relation to the national income, it has been rising with great rapidity during recent years. The government has resorted to one device after another to finance its expenditures.[82] Since May 1, 1939 it has engaged in a not altogether successful experiment of paying government contractors up to 40 per cent in tax-anticipation warrants.[83] It would be hazardous, however, to prophesy a financial collapse on this account. While an inflation may develop gradually over a number of years, its effects can probably be kept within bounds by an authoritarian government which is determined to assert its control over prices, wages, profits and consumption with all the means and power at its command.

In at least one respect the Reich has a marked superiority over France and Britain. Its economy has been much more efficiently and thoroughly organized for war. *Wehrwirtschaft*, or the science of organizing a country's economic life for military purposes, has long been studied and practiced in Germany. For several years the Reich's economic resources have been regimented and mobilized by the government. Long before the outbreak of war Germany was controlling its foreign trade, directing the labor supply and regulating prices and wages. Officials have had ample experience in the handling of all these controls. No instruments or measures had to be hastily improvised. When a leading official proudly proclaimed that Germany possessed an "economic general staff," it was no idle boast.[84]

81. Such was the recent estimate of Otto D. Tolischus, scholarly Berlin correspondent of *The New York Times*. Cf. *The New York Times*, August 19, 1939.

82. For an analysis of German finances, cf. deWilde, "Germany's Controlled Economy," cited, pp. 301-03.

83. Cf. Reichskreditgesellschaft, *Deutschlands Wirtschaftliche Lage in der Jahresmitte, 1939*, cited, pp. 42-47.

ITALY RELATIVELY POOR

Although Italy has so far remained neutral, the possibility of its intervention on Germany's side cannot be ignored. On the whole, its economic potential is rather negligible compared to that of the present belligerents. While steel production rose from 934,000 tons in 1913 to 2,323,000 in 1938,[85] the total is still less than a fifth of Britain's. The number of motor cars manufactured in 1938 constituted only 15.5 per cent of British output and 32.3 per cent of French production.[86] The war industries proper have undergone considerable development, so that Italy now has the necessary capacity to produce its own arms and munitions—at least in peace time.[87] Its factories are reported to be capable of turning out about 250 planes per month.[88] One of the country's weaknesses is the poor strategic location of most of its major industries within a triangle formed by Turin, Genoa and Milan—all lying within 100 miles of the French frontier.

Serious Raw Material Deficiencies. While Italy usually imports part of its consumption in cereals and a little meat and fish, its food supply in time of war should be fairly adequate. Home production of foodstuffs equals about 95 per cent of its requirements, figured in terms of calories.[89] Much worse is its position with respect to raw materials. Compared to Italy, Germany is a country rich in natural resources. While the Reich can supply about 62 per cent of its mineral raw materials, Italy can furnish but 19 per cent of its requirements.[90] It produces significant amounts only of bauxite, sulphur, mercury, hemp and raw silk—all materials of secondary importance.[91] It has practically no coal, iron ore, copper, petroleum or other important minerals.

84. Cf. the speech delivered by Dr. Landfried, State Secretary in the Ministry of Economics, at Koenigsberg on August 21, 1939. *Deutsche Bergwerks-Zeitung*, August 22, 1939.

85. League of Nations, *Statistical Yearbook, 1926* and *1938-1939*.

86. Percentages compiled from League of Nations, *Statistical Yearbook, 1938-1939*.

87. Hanson W. Baldwin, *The Caissons Roll* (New York, Knopf, 1938), pp. 163-64.

88. Hanson W. Baldwin, *The New York Times*, September 4, 1939.

89. "World Self-Sufficiency in Foodstuffs," *Weekly Report of the German Institute for Business Research*, February 9, 1939.

90. Ferdinand Friedensburg, *Die Mineralischen Bodenschätze als Weltpolitische und militärische Machtfaktoren* (Stuttgart, Ferdinand-Enke-Verlag, 1936), p. 52.

91. Cf. deWilde, "Raw Materials in World Politics," cited.

Despite strenuous efforts to raise output, domestic iron ore production reached only 505,000 metric tons last year. Italian coal mines yielded less than 1,000,000 tons in 1938, as compared with 186,000,000 for Germany.[92] In 1937 about 2,599,000 tons of mineral oil and petroleum products, and 12,823,000 tons of coal and coke had to be imported. Imports of scrap iron and steel aggregated 545,000 tons; of raw iron and steel 168,000 tons; and of iron and steel manufactures 105,000 tons.[93]

Italy's position in time of war would be exceedingly vulnerable. While it has probably accumulated stock piles of certain raw materials such as petroleum, it would in the long run have to rely heavily on foreign sources of supply. The Italian merchant marine, which is twice as large today as in 1913,[94] might in theory be able to carry much of the country's imports, but in practice the British and French navies would probably confine Italian shipping to a very narrow zone in the Mediterranean. About 86 per cent of Italy's total import trade comes through the Mediterranean,[95] and only a small proportion of this percentage is derived from countries bordering on this sea.[96] If Britain and France block all entrances to the Mediterranean, Italian industry would be reduced to impotence within a relatively short time.

Even if Italy were able to keep open its trade channels with the outside world, it could hardly pay for a large volume of imports. From the beginning of 1930 to the end of 1938 the gold holdings of the Bank of Italy declined from 5,190,000,000 to 3,674,000,000 lire,[97] while its foreign assets dropped from 5,154,000,000 to 152,000,000 lire. Together they constitute only 44 per cent of Italy's purchases abroad in 1938. No estimate of Italian foreign investments is available, but the total cannot be very large.

Italian public finances may not be equal to the strain of a long war. The economic crisis, the Ethiopian war, and rearmament have put a heavy burden on the country's limited financial resources. Although official figures are not available, government expenditures have probably exceeded receipts by at least 56 billion lire during the five-year period ending June 30, 1939.[98] On this basis, the total public debt can be estimated at about 160,230 million lire—an amount which is more than 50 per cent greater than in June 1914 even after taking into account the depreciation of the lira.[99] Nevertheless, Italy's inadequate supply of raw materials is likely to present more serious and immediate difficulties than its ability or inability to finance large war expenditures.

INCREASED STRENGTH OF THE U.S.S.R.

While the Soviet Union still pursues an uncertain course in the current war, its intervention on a large scale would certainly influence the outcome of the conflict. No country in the world has undergone such a tremendous economic revolution since the last war as the Soviet Union. Tsarist Russia, with its 143 million people, was essentially an agricultural country. Farm yields compared very unfavorably with those of Western Europe, and the country's vast natural resources remained largely unexploited. Its industrial development, financed primarily with foreign capital, was still in its infancy. Under the Soviet régime the change has been phenomenal. In successive five-year plans new and vast industries have been built up. The natural wealth of the country has been utilized on a large scale.

The economic progress made by the Soviet Union is best visualized by comparing its output in some of the basic materials with that of Germany both for 1913 and the most recent years. In 1913 Germany produced almost four times as much iron and steel as Russia, three times as much iron ore and over five times as much coal. Today Germany's margin of superiority in all three items is less than 50 per cent, and the Soviet Union has far outstripped it in the output of iron ore.

A comparison of figures for 1929 and 1938 reveals that the pace of Russia's development has been particularly rapid in the last decade. Just as in Germany, a large proportion of the country's industrial production appears to be devoted to armaments. The State Planning Commission has given preference to the four Defense Commissariats in the allocation of supplies, while the war industries proper have been able to obtain the best materials, technicians and workmen.[100] Although there has been

92. League of Nations, *Statistical Yearbook, 1938-1939.*

93. League of Nations, *International Trade Statistics, 1937* (Geneva, 1938).

94. In June 1938 the merchant marine totaled 3,290,000 gross tons, as compared with 1,522,000 in June 1913. Cf. League of Nations, *Statistical Yearbook, 1926* and *1938-1939.*

95. David H. Popper, "Strategy and Diplomacy in the Mediterranean," *Foreign Policy Reports,* June 1, 1937.

96. In 1938 Italy obtained only 12.5 per cent of its imports from Mediterranean countries. Cf. "Italy in the Mediterranean," *The Economist,* July 29, 1939.

97. The drop was actually greater, since the lira was devalued by 41 per cent in 1936 and the value of the Bank's gold correspondingly written up.

98. *The Financial Times,* August 10, 1939.

99. The total public debt on June 30, 1914 amounted to 15,766 million lire, and on June 30, 1934 to 104,230 million. Today it takes about 6.239 lire to make one pre-war lira. Cf. League of Nations, *Memorandum on Public Finance 1922* (Geneva, 1923), and *Statistical Yearbook, 1934-1935.*

100. Cf. "Russia's War Potential," *The Economist,* April 22, 1939.

PRODUCTION OF BASIC MATERIALS IN U.S.S.R. AND GERMANY

(in millions of metric tons)

	1913		1937		1938	
	Germany	*Russia*	*Germany*	*U.S.S.R.*	*Germany*	*U.S.S.R.*
Coal	190.10	36.01	184.51	122.56	186.18	132.90
Iron ore	28.60	9.54	2.76*	14.00*†	3.10*	14.00*†
Pig iron and ferro-alloys	16.63	4.63	16.34**	14.52	18.59**	14.71
Steel (ingots and castings)	17.60	4.87	20.01**	17.82	23.21**	18.08
Petroleum	0.12	9.20	0.48**	27.82	0.61**	28.86

Source: League of Nations, *Statistical Yearbook, 1926* and *1938-1939*.
*Metal content. †1936 figure. **Including Austria.

considerable dispute concerning the quality of Russian war material, a German expert has declared that the Soviet army "must be regarded as one of the best-armed forces of the world with respect to its equipment with motorized apparatus of all kinds." Writing at a time when the Soviet Union and Germany were still at loggerheads, this same expert considered the state of Russia's industry and its preparations for mobilization adequate, with some qualifications, for the increased motorization requirements of a modern war.[101] The machine or engineering industry, which is so vital in wartime, has been greatly expanded. Although machinery and electrical apparatus constitute a large proportion of the country's imports, they amounted to but 3 per cent of domestic production in 1937.[102]

PRODUCTION IN THE SOVIET UNION

	1929	*1938*
Investment goods production[1]	100.0	485.7[2]
Industrial output[1]	100.0	470.0
Machine production[1]	100.0	926.0[2]
Pig iron and ferro-alloys[3]	4,320.0	14,711.0
Steel[3]	5,003.0	18,088.0
Coal[3]	41,800.0	132,900.0
Motor cars and lorries[4]	1.0	215.0
Electricity[5]	6,224.0	36,400.0[6]
Goods carried by rail[7]	112,950.0	354,800.0[6]

Source: League of Nations, *Statistical Yearbook, 1938-1939*.
1. Index. 2. 1936. 3. In thousand metric tons.
4. In thousands. 5. In million kwh. 6. 1937.
7. In million ton-kilometers.

Outside the United States there is no nation which enjoys such a degree of self-sufficiency as the Soviet Union. It produces all its own food, although the low level of consumption is partly responsible for this. It is the one European country which can satisfy its own requirements in coal, iron ore and petroleum. Tin, antimony, tungsten, nickel and natural rubber are the only raw materials in which there is a considerable deficiency. Of these, tin is of no great strategic importance, and sufficient supplies of nickel, tungsten and antimony can be stored. According to one source, the synthetic rubber industry supplied 70 per cent of the country's consumption in 1937.[103] With the exception of small quantities of wool, the U.S.S.R. produces all the raw materials needed by its textile industry.

Unquestionably there are still great weaknesses in the Soviet Union's economic structure. One of the most serious is the inadequate transportation system. With vast distances between centers of industry and sources of raw material, and with the rapid process of urbanization, demands for transportation have steadily grown. The railways have been chronically overtaxed. While new railway lines have been built and the trans-Siberian has been double-tracked in recent years, construction has run far short of requirements. Road-building has also lagged behind, although the construction of motor highways connecting Moscow and the Ukraine with the Western frontier is now proceeding rapidly.[104]

Another problematic factor in Russia's war strength is the quality of its industrial man power. The country's population — 169,000,000 — is large enough, but the efficiency of industrial labor and management is still very low compared to the level of industrialized nations in Western Europe. The purges during recent years brought about sweeping changes in the leading personnel of most economic enterprises. As yet it is hard to judge what effect these shifts in management would have in case of war.

Like Germany, the U.S.S.R. would have no difficulty in diverting its economic resources into war channels. The government owns the means of production and the mineral wealth of the country. Through collective and state farms it controls most of the food output. Deficiencies of the transportation system, together with inefficiency of centralized management, might, however, slow up the pace of economic mobilization for war

101. Dr. Haudann, "Das Motorisierungspotential der Sovjet Union," *Veröffentlichungen des Instituts für allgemeine Wehrlehre der Friedrich-Wilhelm-Universität Berlin*, Heft 1.
102. "Russia's War Potential," *The Economist*, cited.
103. *Ibid.*
104. *Ibid.*

1939 COMPARED TO 1914

Since 1914 the economic position of the principal European powers has altered in many respects. Germany's industrial capacity is far superior to that before the World War. Its food production is larger and, if it can obtain effective access to supplies in Poland and Southeastern Europe, France and Britain may find it less easy this time to "starve out" the Reich. Germany will have the greatest difficulty in maintaining an adequate supply of fats. The output of raw materials from domestic sources is greater than in 1914, with one notable exception—iron ore. The Reich's most serious deficiencies are in iron, petroleum and rubber. For iron it must largely rely on Sweden, for mineral oil on Rumania and the Soviet Union. For this reason control over Swedish and Rumanian resources will be hotly contested by all the belligerents. While the Soviet Union can theoretically supply considerable quantities of manganese, timber and oil, the remoteness of these raw material sources from the German frontier, together with the lack of adequate transportation facilities, may greatly limit its assistance to Germany even if Russia is inclined to aid. The conquest of Poland has completely relieved the threatened shortage of coal in Germany and given the country a large exportable surplus which it can barter against food and raw materials.

Although the Reich's economic life is much better organized for war than in 1914, its foreign resources are far inferior. It is a debtor instead of a creditor country, and its reserves of foreign exchange and gold are negligible by comparison with 1914. Its ability to pay for vital imports is much smaller. As soon as Germany has dissipated its limited foreign assets, it may be compelled by military necessity to seize direct control of important sources of supply in Southeastern and Northern Europe.

No fundamental change has taken place in the economic power of Britain and France. The industrial capacity of both countries is larger than in 1914. Britain has developed a number of industries vital to national defense, and France has gained the rich industrial region of Alsace-Lorraine. With the frontiers better protected against invasion, French production can probably be maintained at higher levels than during the World War. The domestic output of food and raw materials has not been materially affected, with the important exception that France now has a surplus, instead of a deficiency, of iron ore. The navies of both powers still control the seas and can probably keep open the channels of trade with overseas countries. Although the carrying capacity of the British merchant marine is smaller in comparison with the volume of imports, the loss is more than compensated by the possibility of utilizing neutral shipping facilities which are much greater today than in 1914.

In several respects the position of Britain and France is worse than during the World War. American neutrality legislation prevents them from borrowing in the United States and from drawing on American factories for arms and aircraft. Nor are their gold reserves and foreign assets quite as large as in the last war. Nevertheless, their present margin of superiority over Germany is still wider than in 1914. Provided the Reich is no more successful than last time in severing Britain's lifelines to overseas countries, the economic staying-power of the Allies would again appear to be greater than that of Germany.

The outcome may be affected by the intervention of Italy and the Soviet Union. Germany's Axis partner may, however, prove an economic liability rather than an asset. Its economic potential is comparatively negligible. Despite strenuous efforts to achieve a greater degree of autarchy, Italy's output of basic industrial products has remained small and its dependence on foreign raw materials has not been substantially reduced. The participation of the Soviet Union would be of much greater weight. The U.S.S.R. is the only country whose economic power is vastly superior to 1914. In sharp contrast to Tsarist Russia, it has developed its natural wealth to a large degree and built up huge industries capable of turning out an enormous amount of war material. Its deficient transportation system may, however, seriously handicap the mobilization of its economic resources.

The November 1 issue of FOREIGN POLICY REPORTS *will be*

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Can Japan exploit the war in Europe to consolidate its "new order in East Asia"? This report contrasts Japan's current military, diplomatic and economic position with that in 1914-1918.